

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

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**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

14 -04- 2005

Applicant's or agent's file reference

A 214 PCT

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.  
PCT/SE 2004/001882

International filing date (day/month/year)  
16.12.2004

Priority date (day/month/year)  
19.12.2003

International Patent Classification (IPC) or both national classification and IPC

C02F 1/74, B01F 3/04

Applicant

Andersson, Kurt

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/SE 2004/001882

**Box No. I Basis of this opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

This opinion has been established on the basis of a translation from the original language into the following language, \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- a sequence listing  
 table(s) related to the sequence listing

b. format of material

- in written format  
 in computer readable form

c. time of filing/furnishing

- contained in the international application as filed.  
 filed together with the international application in computer readable form.  
 furnished subsequently to this Authority for the purposes of search.

3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/SE 2004/001882

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The question whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

the entire international application

claims Nos. \_\_\_\_\_

because:

the said international application, or the said claims Nos. \_\_\_\_\_

relate to the following subject matter which does not require an international preliminary examination (*specify*):

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_\_\_\_\_  
are so unclear that no meaningful opinion could be formed (*specify*):

The claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported  
by the description that no meaningful opinion could be formed.

no international search report has been established for said claims Nos. 10

the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of  
the Administrative Instructions in that:

the written form  has not been furnished

does not comply with the standard

the computer readable form  has not been furnished

does not comply with the standard

the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not  
comply with the technical requirements provided for in the Annex C-bis of the Administrative Instructions.

See Supplemental Box for further details.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No. <b>PCT/SE 2004/001882</b>
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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>
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**1. Statement**

Novelty (N)	Claims	<u>1-9, 11-14</u>	YES
	Claims	<u>                  </u>	NO
Inventive step (IS)	Claims	<u>4-5, 8-9</u>	YES
	Claims	<u>1-3, 6-7, 11-14</u>	NO
Industrial applicability (IA)	Claims	<u>1-9, 11-14</u>	YES
	Claims	<u>                  </u>	NO

**2. Citations and explanations:**

**The invention**

The invention concerns a device for mixing air and water in a water purifier. The mixing device comprises a water inlet pipe and an air inlet pipe. The air inlet pipe extends coaxially within the water inlet pipe and defines therewith an annular gap. An annular water jet is provided. Downstream of the annular gap there is a mixing member.

Similar water purifiers according to prior art technique clog. Furthermore, the mixing is not sufficient.

These deficiencies are overcome in that the mixing member includes a helical water flow disturbing device. The flow disturbing device is hit by the annular water jet. Parts of the inlet pipes which define the annular gap, consist of plastic material.

**Cited documents**

These documents are cited in the International Search Report. The citations are considered to describe the most relevant prior art:

- D1) SE-C2-504 449 =US-A-6 036 178
- D2) US-A1-3 852 384
- D3) EP-A2-0 731 062

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/SE 2004/001882

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

A device for mixing water and air in a water purifier is already known from D1. An air inlet pipe extends coaxially inside a water inlet pipe (fig. 1 & claim 1). There is an annular gap between the one end of the air pipe and an inner wall of the water pipe. The water inlet pipe defines a mixing portion.

**Analysis**

*Claim 1*

The invention according to claim 1 differs from the teaching of D1 in that claim 1 describes a helical means in the mixing chamber. Another difference is that the inlet pipes are made of plastic material.

These differences result in that the mixing and oxygenization of water are improved. Moreover, clogging is prevented. The person skilled in the art, who is aware of D1, encounters the problem of arriving at the advantages mentioned above.

Improving mixing and oxygenization of water and minimizing clogging are desires that are common when mixing air and water. The solutions that are presented in claim 1 are common in the technical field. D2, for example, describes a helical baffle that provides a spiralling path for air-water (fig. 2 & column 3, lines 23-31). Reference is also made to D3 (fig. 2 & claim 1), which reveals a similar technique. Considering the other difference, i.e. preventing clogging with plastic material, reference is made to e.g. D2 (column 4, lines 61-67).

Modifying the technique according to D1 with a helical means to improve mixing and using plastic material to prevent clogging lacks an inventive step. The specific adjustments revealed in claim 1 are well known in the technical field. A special and unexpected technical effect is not considered to be obtained with these adjustments.

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**WRITTEN OPINION OF THE  
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International application No.  
**PCT/SE 2004/001882**

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: **BOX V**

**Claims 2-3**

Claims 2-3 teach that the plastic material is polyethylene. This material is known from D2.

**Claims 6-7**

Claims 6-7 reveal how the helical means is arranged. These features are described in D2.

**Claims 11-14**

The shape and material of the tube in the mixing member, the pipe coupling and the flow control means according to claims 11-14 are all items of equipment that are well known to the person skilled in the art.

**Conclusion**

In accordance with the arguments stated above, the invention in claims 1-3, 6-7, 11-14 is novel, but not considered to involve an inventive step. All the claims are considered to have industrial applicability.

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International application No.  
PCT/SE 2004/001882

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawing or on the question whether the claim are fully supported by the description, are made:

*Claim 1*

The expression "around through-flow portions (6a) thereof within said helical means (8)" used in claim 1 is vague and unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers. The description does not give any information either concerning exactly what those through-flow portions (6a) are or what they do.

*Description & Claim 10*

The through-flow portion (6a) is written in singular form in the description p 3 and in claim 10. In claim 1 and in the description p 2, the through-flow portion (6a) is in plural form.

*Claim 11*

Since the tube (9) in claim 11 has been mentioned earlier in claim 6, the word should be preceded by the article "the", not "a".